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A Study on Chelonian Fauna of River Tungabhadra (Hampi vicinity), Karnataka

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Abstract

In order to increase the data on area wise biota, several surveys are being conducted in India, which is replete with rich flora and fauna. Hence, from 2013 we studied the chelonian fauna of Hampi, wherein the river Tungabhadra forms the abode for four turtle species viz., *Nilssonia leithii* (Gray), *Chitra indica* (Gray), *Lissemys punctata* (Lacepede), and *Melanochelys trijuga* (Schweigger), and the enveloping scrub jungle harbors a lone tortoise species, viz., *Geochelone elegans* (Schoepff). Certain environmental factors, threats to chelonians and conservation measures are discussed.

Keywords: Conservation, Hampi, Turtle, Tortoise, Tungabhadra River

Introduction

River Tungabhadra is a major tributary of river Krishna. The river Tungabhadra derives its name from the Tunga, and the Bhadra, which originates from different locations in Western Ghats situated at an altitude of 1198 above MSL and combine at Koodli near Shivamoga to become Tungabhadra. Major tributaries are the Bhadra, the Haridra, the Vedavati, the Tunga, the Varda and the Kumdavathi. The catchment area up to Karnataka and Telangana border is 57,548 sq. Km. excluding the portion of Vedavati river flowing through Andhra Pradesh (7148 sqkm). Thus it enriches various parts of the Hampi and Hospet taluk as well forming a lifeline of this region and its suitable habitat for various aquatic flora and fauna with hundreds of species of wild fishes and other aquatic wildlife. The study area of river Tungabhadra is surrounded by vast stretches of scrub jungles. This river harbours more than 48 species of fishes (Gowda *et al.* 2015), smooth-coated otters, Mugger Crocodiles (Samad, K. unpublish.), and four species of turtles including Giant soft-shell turtles.

About 24 species of fresh water turtles and 5 species of Tortoises are found in India (Purkayastha, *et al.* 2015, Anuja, *et al.* 2019). Detailed survey about the distribution and diversity of Chelonian fauna of Karnataka in general and river Tungabhadra in particular is lacking. Hence, the present study was aimed to explore the chelonian species of this region.

Material and Methods

The study conducted in geographical location at a latitude 15°16′N and longitude 76°20′E near Holey Mudlapura and latitude 15°25 ′N and longitude 76°34′E at the bridge between Kampli and Chikka Jantakal in Gangavati taluk. The studies were carried out utilizing the services of local fisher men and their inputs helped us to collect the baseline information. Using coracles the turtles were sighted with the help of binoculars during the day time and the sandy regions of the river were thoroughly inspected to locate the nesting sites. Later on the specimens were photographed using 7D SLR camera with 100-400 lens and Nikon P700 cameras.

Results

Our field explorations in and around river Tungabhadra resulted in recording four fresh water turtle species *viz.*,

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Leith's softshell turtle *Nilssonia leithii*; Narrow-headed soft-shell turtle *Chitra indica*, Indian Soft-shell Turtle *Lissemys punctata*, and Indian narrow-headed black Turtle *Melanochelys trijuga*, and the enveloping islands with scrub jungle becomes the habitat for one Indian star tortoise, *Geochelone elegans*. The details are as follows:

Systematic Account

1. *Nilssonia leithii* (Gray, 1831)

Common Name: Leith's softshell Turtle

Distribution: This species is endemic to Peninsular Indian rivers in Madhya Pradesh, Maharashtra, Odisha, Karnataka, Andhra Pradesh, Tamil Nadu and Kerala. It is commonly found in rivers such as Godavari, Bhavani, Ghataprabha, Tungabhadra, Cauvery, Moyar. (Das *et. al*. 2014). Once a common species, now facing drastic population depletion due to illegal trade, siltation and drying up of rivers during summer (Das *et. al*. 2014).

Conservation Status: Vulnerable, VU (IUCN Red list), Appendix II (CITES) and Schedule IV, Indian Wildlife (Protection) Act, 1972.

2. *Chitra indica* (Gray, 1831)

Common Name: Narrow-headed softshell Turtle

Distribution: The Indian narrow-headed softshell turtle *Chitra indica* (Family Trionychidae) is an extremely large and highly aquatic species; it is widely distributed on the Indian subcontinent. The species is widespread in South Asia and occurs in different north Indian riverine systems. The review of its distribution in southern peninsular India is patchy and sporadic, and this turtle was found in the river Dhond near Pune, Maharashtra as well in Kollidam River (a tributary of river Cauvery), as it flows through delta of Thanjavur (Webb, 1981). Its population sizes are unknown, but the species appears to be threatened by human exploitation and modifications of its riverine habitat (Das & Singh, 2009). Our team surveyed in Thungabhadra and reports its distribution for the first time from this river.

Conservation Status: Endangered-EN (IUCN Red list), Appendix II (CITES) and Schedule IV, Indian Wildlife (Protection) Act, 1972.

3. *Lissemys punctata* (Lacepede, 1788)

Common Name: Indian Flapshell Turtle

Distribution: Lissemys punctata is restricted to the Indian sub region. The nominotypical subspecies occurs in southern peninsular India, in the states of Kerala and Tamil Nadu (Bhupathy *et al*., 2014). This is the most common and widespread species of turtle in South Indian rivers as well as in the Tungabhadra river within study area. During the study, team sighted the species collected in large numbers illegally and brought them to fish markets in gunny jute bags and pouring them in front of the people to sell them in day light in late afternoon by Bangladeshi (origin) fisherman community (plate 2). However, this species population is gradually declining due to illegal hunting and trapping by fishermen and tribal hunters. Three sub species recognized in India (Smith, 1933).

Conservation Status: Least concerned-LC (IUCN Red list), Appendix II (CITES). Schedule I, Indian Wildlife (Protection) Act, 1972.

Distribution: Indian Black Turtle also called as Indian Pond Terrapin is the most common semi aquatic turtle found in Indian rivers, ponds, lakes and other freshwater bodies. Six subspecies are currently recognized (Das & Bhupathy, 2009).

Conservation Status: Near Threatened-NT (IUCN Red list). Not listed by CITES and not listed under Indian Wildlife (Protection) Act, 1972 yet (Ahmed & Das, 2010).

4. *Geochelone elegans* (Schoepff, 1795)

Common Name: Indian Star Tortoise

Distribution: The star tortoise is distributed throughout Central and southern India and north of Narmada River in Gujarat State (Vyas and Parasharya, 2000).

Conservation Status: The Indian star tortoise was upgraded to CITES Appendix I in 2019 (threatened with extinction), Near Threatened-NT (IUCN Red list). Schedule IV, Indian Wildlife (Protection) Act, 1972.

Discussion

The current study sheds light upon the biotic potential of the river Tungabhadra, it is a hub of faunal congregation or faunal hotspot, as the river is said to nurture more than 90 species of fishes, smooth coated otters, mugger crocodiles (Samad, K. unpublish.) and many more animals which are not studied so far. The quality of water

and the fertile nature of the river Tungabhadra makes it conducive to harbor a spectrum of animals supported by suitable climatic factors. The river Tungabhadra is known to harbor four turtle species which are sympatric, each species occupy niche of their own. During our study we observed the bigger mud turtles *N. leithii* and *C. indica* are bottom dwellers and primarily feeds on animals in their respective niches by using their special food acquiring techniques even though they are omnivores. The other two turtles viz. *Lissemys punctata* and *Melanochelys trijuga* are column and surface feeders and generally omnivorous in nature. Further, the inhabitation by the star tortoise in scrub jungles enveloping the river adds credence to the rich biodiversity of the area (Figure 1).

Review and Proposal of Conservation Strategies

Our prime aim is to protect, preserve and conserve different species of organisms to maintain biodiversity and thus bringing ecological balance, which is crucial for the existence of man and other organisms. That is why probably the Indian government promulgated the wildlife Act in 1972 for the first time in the world. Appropriate placement and categorization of animals in proper suitable schedule will serve the aim of protection. The schedule should reflect the ground reality and the real contemporary status of the animal. This helps in paying proper projected attention to those animals which are

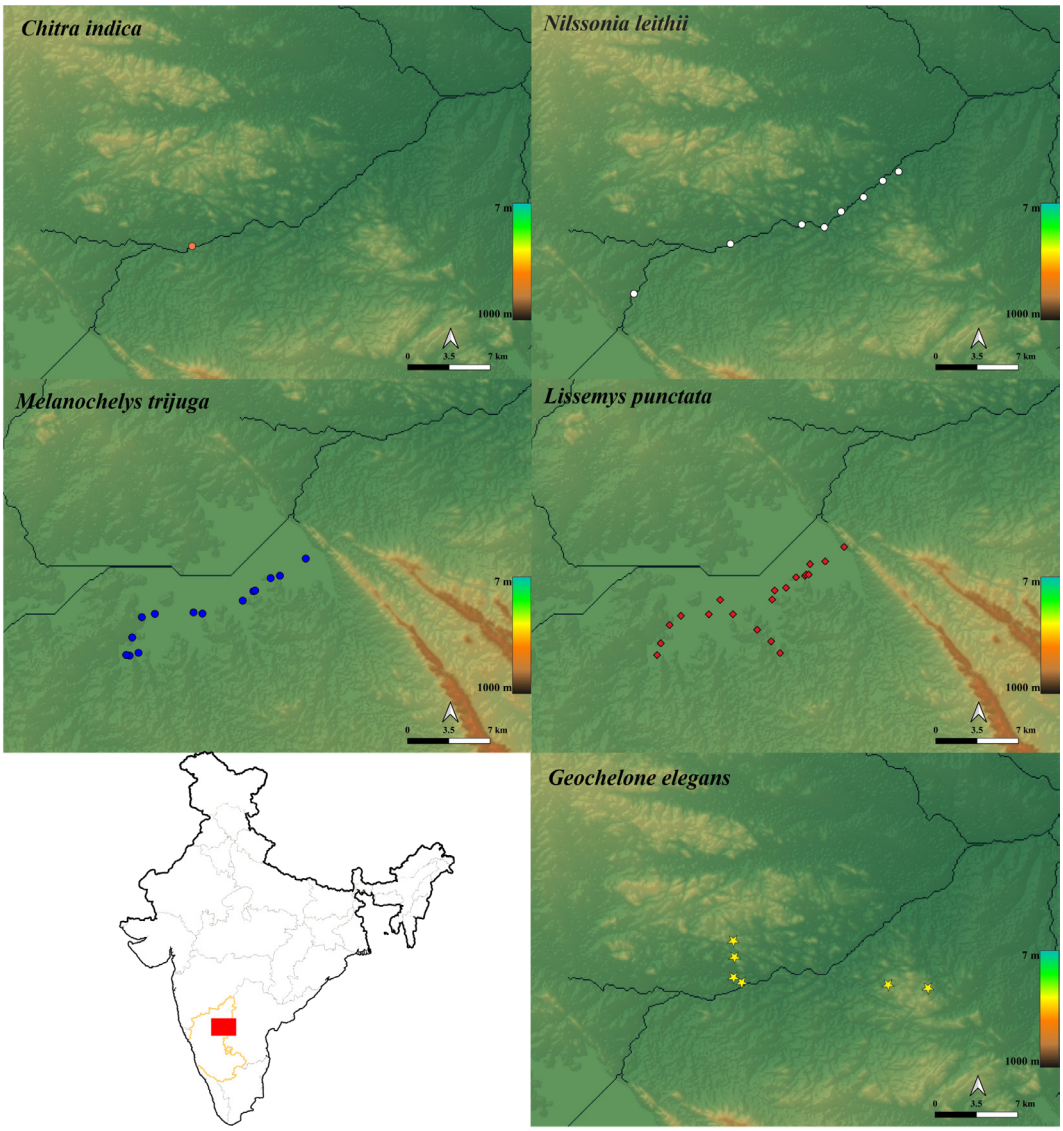

Figure 1. Map representing the distribution of the Turtle/Terrapin species from the study area.

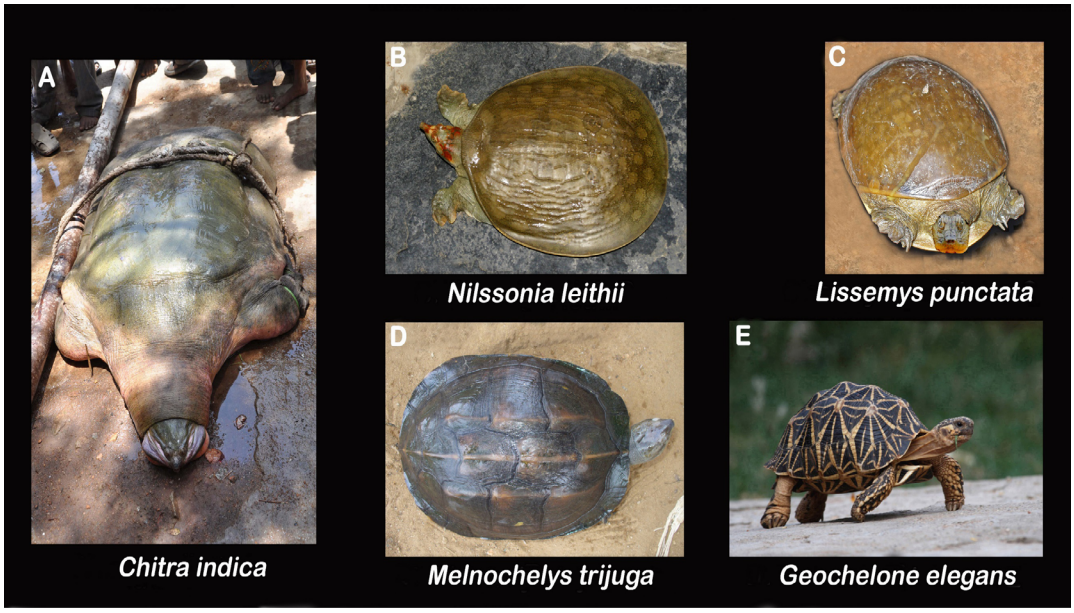

Figure 2. A to D Turtles inhabitating in river Tungabadhra, E. Tortoise inhabitating scrub jungles around Tungabadhra.

in different rungs of threat like, threatened/vulnerable/ Endangered or Critically Endangered. The authors of the present study are of the opinion that rescheduling the tortoises and turtles becomes imperative to preserve and conserve these animals. This should be carried out by utilizing the expertise from the contemporary biologists interested in herpetological studies. More field oriented research, extensive surveys and taking into other conditions like environmental factors will add more credence in reflecting the ground reality.

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